Research in Medicine

Planning a project – writing a thesis

Second Edition

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Contents

Frustrating . . . or rewarding . . .

1 Introduction

Aims of this book

This guide was written primarily for medical students and practitioners considering whether to attempt a programme involving original research in the medical and biological sciences. The author who initiated this text (GM) read for a medical degree, did a stint in research and has now returned to clinical medicine with an academic interest. He was then joined by two others, one of whom (CH) first qualified in medicine and has subsequently remained in research, and another (HE) who has had a primarily academic medical career. Accordingly, the authors themselves represent the major groups of people who do medical research.

Individuals have different reasons for wishing to do research, which include gaining a higher degree. Such a pursuit can be incredibly exhilarating and rewarding. Alternatively, it can be an endless, lonely, boring and frustrating exercise. The aim of this handbook is to guide the potential medical postgraduate candidate away from the latter predicament. It is not intended to dictate the researcher's own originality, creativity or scientific approach. Rather, it is organized around a sequence of practical steps directed at the more pragmatic questions:

'What steps do I take?'
'When and where do I start?'
'How do I get to the end of the tunnel?'
'What do I do next?'

We thereby hope to alleviate unnecessary anxiety and save the

reader valuable time and energy that could then be used in a more productive way. We have accordingly set out much of the text in a simple, didactic format.

Much of what we outline will be simple common sense, but we hope that our presentation will enable the potential research worker to pick out 'the wood from the trees' and assist the reader to his or her task with greater efficiency and confidence. Our comments are directed largely at academic doctors. However, the basic principles of maintaining an effective individual research programme can be applied to all experimental sciences.

Time frame

This guide is organized in the chronological order of the steps most doctors take when pursuing a research programme. Everyone first has to decide whether he or she wishes to pursue research. This is considered in the next chapter. If a research programme is chosen, it can be for different lengths of time, varying from a few months to a lifetime. Nevertheless research programmes tend to fall into four phases. Following the necessary background preparation in the area to be studied, one establishes and develops methods to be used in the research project ('setting up phase'). Time is then needed to assess the limitations of these methods and to develop one's experimental skills to a level where they yield valid results ('frustration phase'). There then follows serious hypothesis testing and obtaining and analysing results ('results phase'). Finally the results are written up and communicated ('writing up phase'). The time and emphasis bearing on each of these steps varies with person and project. In particular, the prominence of the 'frustration phase' varies greatly with circumstances and the good or ill fortune of the investigator. We shall devote most attention to the first and last phases for which even a wide variety of research programmes will have much in common. The time taken to write up the thesis usually increases exponentially with the total time set aside by the doctor for research.

Completion time	*Setting up*	*Frustration*	*Results*	*Writing up*	*Holiday*
1 year	4 weeks	4 weeks	30 weeks	10 weeks	4 weeks
2 years	3 months	3 months	10 months	6 months	2 months
3 years	3 months	8 months	11 months	11 months	3 months

The above table gives a typical expectation of the relative lengths of these hypothetical phases, for different durations of research project. The latter is discussed further in Chapter 3. In order to be realistic, a brief period of holiday is allowed for in each scheme.

Great potential for disasters . . .